

(PCT Article 36 and Rule 70)

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/012542

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-16 as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- nos. _____ as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* 1-8 received by this Authority on 29.07.2005 with letter of 29.07.2005
- nos.* _____ received by this Authority on _____
- ☐ the drawings:
- sheets _____ as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1.	Statement		
	Novelty (N)	Claims <u>1-3</u>	YES
		Claims <u>4-8</u>	NO
	Inventive step (IS)	Claims _____	YES
		Claims <u>1-8</u>	NO
	Industrial applicability (IA)	Claims <u>1-8</u>	YES
		Claims _____	NO
2.	Citations and explanations (Rule 70.7)		
	<p>This report makes reference to the following documents:</p> <p>D1: US 2003/050404 A1 (KRONER MATTHIAS ET AL) 13 March 2003</p> <p>D2: US-A-4 640 793 (PERSINSKI ET AL) 3 February 1987</p> <p>D3: US-A-4 604 431 (FONG ET AL) 5 August 1986</p> <p>1. The present application does not meet the requirements of PCT Article 33(1) because the subject matter of claims 1 to 10 lacks novelty (PCT Article 33(2)).</p> <p>Document D1 describes a method for producing (meth)acrylic acid copolymers which comprise alkylpolyalkylene glycol amine groups. Those copolymers in D1 are produced by the following method steps: (a) radical polymerisation of (meth)acrylic acid, a polymer I resulting, and the amidation of the polymer I by reaction with an alkylpolyalkylene glycol amine compound (page 1, §8 to §11 and page 3, §82 to page 4, §86). The</p>		

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	<p>amidation step may also include the use of aminoalkylsulphonic acid compounds and taurines (page 4, §85). The subject matter of claims 1 to 8 differs from document D1 in that the claimed polymer contains <u>only</u> units based on a poly(meth)acrylic acid skeletal structure and amide units based on aminoalkylsulphonic acids. Alkylpolyalkylene glycol amines or mixtures of the aforementioned compounds are not provided in claims 1 and 4 of the current application.</p> <p>The subject matter of claims 1 to 8 is thus novel.</p> <p>Document D2 discloses a mixture and the use thereof in water treatment and for preventing scale and corrosion in industrial cooling water systems (column 5, pages 5 to 11). Furthermore, the mixtures from document D2 can stabilise zinc compounds and phosphate and/or phosphonate compounds (column 2, line 35 to column 3, line 47). The mixtures from D2 contain a carboxylic acid/sulphonic acid copolymer (a) and a compound (b) as well as phosphates, phosphonates or sulphonates. The weight ratio of carboxylic acid units to sulphonic acid units in polymer (a) is 4:1 to 1:4 (column 4, lines 1 to 3).</p> <p>Document D2 differs, however, from the subject matter of claims 5 to 7 in that the copolymer (a) is not produced by an amidation step. Claims 4 to 8 are product claims. A claim that characterises a product in terms of the production</p>

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	<p>method is considered to be directed to the product as such (Guidelines, C-III, 4.7.b). Although polymer (a) is not produced by an amidation step, polymer I as per claims 4 and 5 of the current application cannot be distinguished from polymer (a) from D2. Polymer I (application) and polymer (a) (D2) are characterised by the same technical features, namely:</p> <ul style="list-style-type: none">- <u>only</u> units based on a poly(meth)acrylic acid skeletal structure and amide units based on aminoalkylsulphonic acids (see examples 105 and 106), and- a molecular weight of 1000 to 20000 g/mol and 5 to 70 wt.% amide units based on aminoalkylsulphonic acids. <p>Since the method for producing the (meth)acrylic acid copolymers of the current application influences the resulting (meth)acrylic acid copolymers, the applicant must add a different technical feature relating to the (meth)acrylic acid copolymers.</p> <p>D2 thus prejudices the novelty of claims 4 to 8.</p> <p>2. The present application does not meet the requirements of PCT Article 33(1) because the subject matter of claims 1 to 3 does not involve an inventive step (PCT Article 33(3)).</p> <p>D2 is considered the closest prior art, since it also concerns (meth)acrylic acid copolymers for treating water and is therefore in the same</p>

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	<p>technical field as the current invention.</p> <p>D2 concerns a mixture for preventing scale in aqueous systems, said mixture comprising the following:</p> <ul style="list-style-type: none">- a polymer, which contains an unsaturated carboxylic acid and an unsaturated sulphonic acid in a ratio of 1:20 to 20:1, and- at least one compound as well as sulphonates. <p>D2 differs from the current invention in that the resulting (meth)acrylic acids are obtained <u>not by amidation</u> of poly(meth)acrylic acid, <u>but by copolymerisation</u> of (meth)acrylic acid with acrylic acid sulphonic acids.</p> <p>The current application therefore addresses the problem of preparing alternative (meth)acrylic acid copolymers.</p> <p>The solution proposed in claims 1 to 3 of the current application cannot be considered inventive (PCT Article 33(3)) for the following reasons:</p> <p>D3 concerns a method for producing acrylamidosulphonic acid copolymers. A (meth)acrylic acid-based polymer is reacted with an aminoalkylsulphonic acid <u>using an amidation method</u> (see examples 1 to 5). It is explicitly disclosed in column 1, lines 9 to 31 that the (meth)acrylic acid copolymers with amidoalkylsulphonic acid groups can be used to</p>

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treat water.

Using the teaching of D3, it would have been obvious to a person skilled in the art to use the copolymer from D1 with the method of production. A person skilled in the art would consider the specific molar ratio between the (meth)acrylic polymer and the aminoalkylsulphonic acid from D1 and would use the method from D3 to produce the copolymer.

The solution proposed in claims 1 to 3 of the current application therefore cannot be considered inventive (PCT Article 33(3)).

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Box No. VI

Certain documents cited

1. Certain published documents (Rule 70.10)

Application No.
Patent No.Publication date
(day/month/year)Filing date
(day/month/year)Priority date (valid claim)
(day/month/year)

2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure

Date of non-written disclosure
(day/month/year)Date of written disclosure
referring to non-written disclosure
(day/month/year)